

TM 9-8014
C 7

Operator and Organizational Maintenance Manual
TRUCK, AMBULANCE: FRONT LINE, ¼-TON, 4 x 4, M170;
TRUCK, UTILITY: ¼-TON, 4 x 4, M38A1
M38A1C AND M38A1D

CHANGE }
No. 7 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 22 October 1964

TM 9-8014, 6 April 1955, is changed as follows:

1. Scope

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b. (Page 1 of C 6)

- * * * * *
- (2) Appendix II provides * * * to the proper **category of maintenance** based on availability of time, tools and skills.
- (3) Appendix III is * * * for **organizational maintenance**.
- d. Any errors or * * * direct to the Commanding General, Hq., U.S. Army Tank-Automotive Center, **Warren, Mich. 48090, ATTN: SMOTA-M.**

3. Forms, Records and Reports

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d. (Page 1 of C 6) Report of * * * forward to Commanding General, Hq., U.S. Army Tank-Automotive Center, **Warren, Mich. 48090, ATTN: SMOTA-M.**

10. Correction of Deficiencies

(Superseded)

Deficiencies disclosed during preliminary inspection which appear to involve unsatisfactory design or material will be reported on DA Form 2407 (Maintenance Request) and prepared in accordance with TM 38-750, and sent to Commanding General, U.S. Army Tank-Automotive Center, ATTN: SMOTA-M, Warren, Mich. 48090.

67. Common Tools and Equipment

(Page 4 of C 6)

Standard and commonly * * * for issue to **organizational maintenance** are listed in appendix III. Common tools and equipment for organiza-

tional maintenance are listed in SM 9-4-5180-A01, SM 9-4-4935-A31, SM 9-4-4910-A86, and authorized for issue by TA and TOE.

78. Daily Preventive Maintenance Service

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b. (Page 8 of C 6) Specific Procedures for **Organizational Maintenance**.
Follow the procedures listed in table II in the numerical order given.

Table II. (Pages 9-12 of C 6) (Superseded) *Preventive Maintenance Checks and Services*

Organizational Maintenance

Daily Schedule

Interval or sequence No.			Items to be inspected	Procedure	Paragraph and figure reference
Before operation	During operation	After operation			
1	-----	-----	Oil and coolant-----	Caution: All tags describing vehicle condition must be placed in the driver's compartment in a conspicuous location. Check oil and coolant levels. Check spare containers for contents.	Para. 117; figs. 36, 37, 51
2	-----	-----	Water pump, fan belts and pulleys.	Inspect pulleys and fan for alinement and bolt for tension ($\frac{3}{4}$ -in. deflection). Inspect water pump for leaks.	Para. 130; fig. 62.
3	-----	-----	Electrical wiring-----	Visually inspect electrical wiring, conduits, connectors and shielding.	
4	-----	-----	Engine compartment-----	Inspect engine compartment for indications of fuel, engine oil, and water leaks. Look under the vehicle for indications of leaking gear oil or brake fluid.	
5	-----	20	Tires-----	Note any apparent loss of air. Remove penetrating objects such as nails or glass. Note unusual wear or missing valve caps.	Para. 248.
6	-----	-----	Fire extinguisher and vehicle publications.	Visually inspect fire extinguisher (on vehicle so equipped) and vehicle publications. Note if fire extinguisher is charged and sealed.	
7	-----	-----	Tools and equipment-----	Inspect vehicle tools and equipment for general conditions and proper stowage.	
8	-----	-----	Vehicle body-----	General condition of body to include check for tampering or damage that may have occurred since last inspection. Inspect doors, windows, pintle reflectors, and lifting shackles.	

Table II. Preventive Maintenance Checks and Services—Continued

Organizational Maintenance

Daily Schedule

Interval or sequence No.			Items to be inspected	Procedure	Paragraph and figure reference
Before operation	During operation	After operation			
*9	-----	-----	Battery-----	Clean, check water level, inspect terminals for tightness and coat with grease (TM 9-6140-200-15).	Para. 162; figs. 97, 99.
10	-----	-----	Cab, doors, glass, top and frame, curtains and fasteners, seats and paint.	Inspect cab or body mountings, including springs. Test operation of doors, windows, windshield ventilator, hood hinges and fasteners. Observe seat mountings and upholstery. Inspect the litter racks and operation of personnel heater (M170 Ambulance). Generally inspect body, glass, panels, tops, fenders, running boards, bows, paulins, and curtains. Examine condition of paint and legibility of markings and identification and caution plates.	
11	-----	18	Lights and horn-----	If tactical situation permits, operate horn and windshield wipers. Inspect rear view mirrors. Check operation of exterior lights and light switches. Note whether the headlights appear to be properly aimed. Note condition of all lights and reflectors.	Paras. 24, 25, 32, 37, 38, 40; figs. 12 and 14.
12	-----	19	Service brake pedal and handbrake lever.	Check service brake for proper pedal travel and hand brake for proper adjustment. (Correct service brake free travel is $\frac{1}{2}$ in.). See references for handbrake adjustments.	Paras. 233, 238; figs. 158, 163.
13	-----	-----	Starter and starter switch.	With the ignition OFF, note if the starter switch requires more than normal pressure, and if the starter engages smoothly without unusual noise and turns the engine with adequate cranking speed. With ignition switch ON start engine. Caution: If there is excessively low or no indication of	Paras. 17, 23; fig. 12.

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14	-----	Engine: idle, acceleration, power, noise, governed speed.	<p>engine oil pressure after a reasonable time lapse (10 seconds max.), stop engine and determine cause.</p> <p>In warming up engine, observe if the choke and throttle controls operate satisfactorily. Note if idling speed is correct. Listen for any unusual noises at idle and higher speeds. When operating the vehicle, note if it has normal power and acceleration in each speed range. Listen for any unusual noises when the engine is under load. Speed up the vehicle, but do not exceed the specified speed ranges as governed by caution data plate.</p> <p><i>Note.</i> Investigate and correct any operating deficiencies as they occur, if beyond the scope of the driver, report them to individuals in authority immediately.</p>	Paras. 16, 22, 43, 44, 49; figs. 6, 7, 12.
21		Temperatures of brake drums, hubs, axles, transmission, transfer, differential.	<p>Immediately after the road test, feel these units cautiously. An overheated wheel hub and brake drum indicates an improperly adjusted, defective or dry wheel bearing or a dragging brake. An abnormally cool condition indicates an inoperative brake. An overheated gear case indicates lack of lubrication, adjustment, or defective parts.</p> <p><i>Note.</i> Full floating hypoid axles operate quite hot. If lubricant levels are correct and no unusual noises occurred during road test, assume axles are functioning properly. Do not touch hypoid axles with bare hand after vehicle has been operated a considerable distance, serious burns may result.</p>	Paras. 190, 197, 206; figs. 129, 130, 146.
22	-----	Radiator and cap	<p>Inspect radiator cores for clogging with foreign matter or if fins are bent. Check gasket in the pressure cap. Observe coolant level and examine coolant for contamination. In cold weather test coolant with hydrometer to see if it contains sufficient antifreeze (TM 9-2858).</p> <p>Caution: If it is necessary to add coolant to the radiator while engine is overheated, idle engine and add coolant slowly. Use extreme caution in removing radiator pressure cap as serious burns may result.</p>	Para. 126; figs. 36, 60.

*See footnote at end of table.

Table II. Preventive Maintenance Checks and Services—Continued

Organizational Maintenance			Daily Schedule	
Interval or sequence No.			Procedure	Paragraph and figure reference
Before operation	During operation	After operation		
		23	Clean and oil winch cable in accordance with the lubrication order. Lubricate daily items specified on lubrication order. Wash vehicle, clean inside of cab, glass, and vision devices. Clean engine and engine compartment as required. Service fuel tank as necessary.	
15				
16		24		
17		25		

*Denotes operations to be performed weekly.

79. General Procedures for Organizational Maintenance

(Page 13 of C 6)

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b. (Superseded) **Organizational Maintenance Participation.** The driver or crew usually accompanies the vehicle and assists the organizational mechanics in the performance of **organizational maintenance** services.

* * * * *

d. *Services.* **Organizational maintenance** services are defined by and restricted to general procedures unless approval has been given by supporting ordnance organization.

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h. *Specific Procedures for Organizational Maintenance.* Specific procedures for * * * performing the service or repair of **organizational Maintenance** level. If repairs by a higher **category of maintenance** is required, a DA Form 2407 (Maintenance Request) will be prepared and forwarded with the equipment to the supporting maintenance activity).

Table III. (Pages 15-21 of C 6) (Superseded) *Preventive Maintenance Checks and Services*

Organizational

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
		PRIOR TO ROAD TEST	
	All "before operation" items in table II.	<i>Note.</i> When tactical situation does not permit a full road test, perform only those items that require little or no movement of the vehicle.	
1	Oil and coolant.....	Check oil and coolant levels. Check spare containers for contents.	Para. 117; figs. 36, 37, 51.
2	Water pump, fan belts and pulleys.....	Inspect pulleys and fan for alinement. Check water pump for leaks. Inspect fan belts for damage (cuts, cracks), and correct tension. Provide $\frac{3}{4}$ -inch deflection.	
3	Electrical wiring.....	Visually inspect electrical wiring, conduits, connectors, and shielding.	Para. 130; fig. 62.
4	Engine compartment.....	Inspect engine compartment for indications of fuel, engine oil and water leaks. Look under the vehicle for indications of leaking gear oil or brake fluid.	
5	Tires.....	Note any apparent loss of air. Remove penetrating objects such as nails or glass. Note unusual or excessive wear or missing valve caps. Gage tires for correct pressure, 25 psi for cross-country or highway driving and 15 psi for mud, sand, or snow operations.	
6	Fire extinguisher, and vehicle publications.	Visually inspect fire extinguisher (on vehicle so equipped) and vehicle publications. Note if the extinguisher is charged and sealed.	
7	Tools and equipment.....	Inspect vehicle tools and equipment for general conditions and proper stowage.	
8	Vehicle body.....	Check for any tampering or damage that may have occurred since last inspection.	Paras. 100, 249, 252.
9	Steering gear and controls.....	Check steering system and components parts for loose or damaged parts.	
			Paras. 222, 230; fig. 149.

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10	Cab: doors, glass, top, frame, curtains, fasteners, straps, and paint.	Inspect these items, paying particular attention to cab or body mountings, including springs. Test operation of doors, windows, hood hinges and fasteners. Observe seat mountings and upholstery. Inspect the litter racks and operation of personnel heater (M170 Ambulance). Make a general inspection of body, including glass, panels, tops, fenders, running boards, bows, top and side curtains. Examine condition of paint and legibility of markings and identification and caution plates.	
11	Lights, horn, and windshield wipers---	If tactical situation permits, operate horn and windshield wipers. Inspect rear view mirrors. Check operation of exterior lights and light switches. Note whether the headlights appear to be properly aimed. Note condition of all lights and reflectors.	Paras. 24, 25, 32, 37, 38, 51; figs. 11, 13.
12	Brake pedal-----	Check service brake pedal for proper travel and handbrake linkage for proper adjustment (correct pedal free travel is $\frac{1}{2}$ in.). See references for parking brake adjustment.	Paras. 233, 238; figs. 158, 163.
ROAD TEST			
13	Instruments—functional check-----	Prior to starting engine, turn ignition switch on and observe instrument operation. Ammeter (if equipped) should indicate light discharge. Battery generator indicator should indicate generator is not charging—pointer in the yellow. Fuel quantity gage should move to indicate fuel tank level. Oil pressure gage should indicate 0 psi and water temperature gage should move from an off scale reading to actual water temperature reading.	Paras. 23, 33, 34, 35, 36; figs. 11, 14.
14	Starter and switch-----	Note if the starter switch requires more than normal pressure, and if the starter engages smoothly without unusual noise, and turns the engine with adequate cranking speed. With ignition switch on, start engine. Caution: If there are extremely low or no indications of engine oil pressure, stop engine after a maximum of 10 seconds to determine cause.	Paras. 42, 85.

Table III. Preventive Maintenance Checks and Services—Continued

Organizational

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
15	Instrument operational check	Note generator output on the ammeter or battery generator indicator immediately after starting engine, before generator regulator has reduced the charging rate. Observe all instruments for normal readings. Note whether the ignition switch and light switch assembly operate freely and make positive contact. Check all other controls for normal operation.	Paras. 23, 24, 42; figs. 11, 14, 15.
16	Engine operation	In warming up engine, observe if the choke and throttle controls operate satisfactorily. Note if idling speed is correct. Listen for any unusual noises at idle and higher speeds. When operating the vehicle, note if it has normal power and acceleration in each speed range. Listen for any unusual noises when the engine is pulling a load. Speed up the vehicle, on a level stretch, to see if it will reach, but not exceed, the specified governed speed.	Paras. 30, 32; figs. 6, 7, 11.
17	Generator	Watch the ammeter battery generator indicator to note whether generator is charging properly. Observe unusual noises.	Para. 33; figs. 11, 12.
18	Clutch	Note if the clutchpedal has at least 1¼ inch of free travel and if action of the pedal return spring is satisfactory. Note whether clutch disengages completely or has a tendency to drag. Observe smoothness of engagement and tendency to chatter, grab or slip, and any unusual noises. With transmission in neutral, depress and release clutch pedal, listening for a defective release bearing.	Paras. 15, 92, 191; fig. 121.
19	Transmission and transfer	Shift transmission into all speeds and transfer into high and low ranges, observing any unusual stiffness of the shift levers, tendency to slip out of gear, unusual noise, or excessive vibration. Make similar observations of the transfer clutch lever.	Paras. 18, 19, 93, 94; figs. 11, 13.

20	Service and handbrake operation-----	Note if action of brake return spring is satisfactory. Observe if pedal goes too close to floor. Make several stops, noting side pull, noise, chatter grabbing, or any other abnormal condition. Observe if the handbrake lever ratchet holds and if the lever requires more than three-quarters travel for full application. Stop the vehicle on an incline and apply the handbrake to determine if it holds the vehicle.	Paras. 14, 20, 98, 99, 233; figs. 11, 13, 158.
21	Steering system-----	With the vehicle moving straight ahead, determine if there is any tendency to wander, shimmy or pull to one side. Turn the steering wheel through its entire range and note any binding.	Paras. 13, 102.
22	Power train, wheels, body, and chassis-----	At all times during the road test, be alert for unusual or excessive noises that may indicate looseness, defects, or deficient lubrication at any point.	
23	Hub, drum, axles, power train-----	Immediately after the road test, feel these units cautiously. An overheated wheel hub and brake drum indicates an improperly adjusted, defective or dry wheel bearing or a dragging brake. An abnormally cool condition indicates an inoperative brake. An overheated gear case indicates lack of lubrication, gears out of adjustment, or defective parts. Caution: Full floating hypoid axles operate quite hot. If lubricant levels are correct and no unusual noises occurred during road test, assume axles are functioning properly. Do not touch hypoid axles with bare hand after vehicle has been operated a considerable distance, serious burns may result.	
24	Battery: specific gravity-----	Make hydrometer test of electrolyte in each cell of both batteries (1.275—1.300 at 80° F.) and record the readings on DA Form 2404. (Equipment Inspection and Maintenance Worksheet) (ref TM 9-6140-200-15).	
25	Battery voltage-----	Perform starting motor cranking voltage test (24 V DC) using test meter. Record the voltage registered on DA Form 2404. On vehicle section equipped, check insulator on position (X) part of the inner battery between cover and terminal.	

Table III. Preventive Maintenance Checks and Services—Continued

Organizational

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
26	Battery terminals, carrier and fluid level.	Clean tops of batteries, coat terminals lightly with grease, and repaint carrier if corroded. Inspect the level of water to see that it covers the tops of the plates. <i>Note.</i> If distilled water is not available, clean water, preferably rain water, may be used. Service date must be stamped on all batteries near the negative post (ref TM 9-6140-200-15 for testing and stamping of undated batteries).	Para. 162; figs. 97, 99.
27	Spark plugs-----	Remove and inspect plugs. Clean and gap 0.028-0.033 inch. Replace if necessary.	Para. 153.
28	Compression test-----	With engine at normal operating temperature, throttle and choke full open, test compression of each cylinder. Record readings in space provided on DA Form 2404.	Para. 106; fig. 38.
29	Ignition components-----	Remove and inspect distributor, cap, rotor, etc. Test operation of advance mechanism by hand. Test distributor shaft for looseness. Dress or replace breaker points, adjust gap 0.018-0.022 inch. Replace other ignition components as required.	Paras. 151, 152; figs. 79, 83.
30	Carburetor, choke, throttle, linkage----	Inspect these items, noticing particularly if the shafts and linkage operate freely and are not excessively worn. Observe if the choke valve opens fully when the accelerator is fully depressed or the hand throttle control is all the way out.	Paras. 21, 22; figs. 11, 12, 64, 65.
31	Carburetor adjustment-----	Perform an engine vacuum test and adjust carburetor idle mixture. Be sure fuel pump pressure is between 4 and 5¼ psi at idling speed. Check the ignition timing with timing light for correct timing and proper advance (5° BTDC). Test generator regulator with low-voltage circuit tester.	Para. 149.
32	Fuel filter (in tank)-----	Clean or replace fuel filter element-----	Para. 139; figs. 68, 69.

33	Manifold (exhaust)-----	Inspect for cracks and signs of exhaust gas leakage at the manifold gaskets.	Paras. 112, 113; fig. 42.
34	Exhaust pipe and muffler-----	Inspect for cracks and listen for excessive or unusual noises and look for exhaust leaks. Tighten mounting.	Para. 143; fig. 73.
35	Crankcase ventilation-----	Inspect carburetor air cleaner and air cleaner elbow, and the crankcase ventilation metering valve for cleanliness and condition. On vehicles so equipped, inspect operation of the ventilation shutoff valve dual control. Clean and service these items in accordance with lubrication order.	Fig. 66.
36	Radiator and cap-----	Inspect these items, noting particularly if the radiator cores are clogged with foreign matter or if fins are bent. Check gasket in the pressure cap. Observe coolant level and examine coolant for contamination. Test coolant with hydrometer to see if it contains sufficient antifreeze to correspond with seasonal requirement. Tighten radiator hose clamps and mounting bolts. If need is indicated, drain cooling system, clean and fill, adding corrosion inhibitor unless antifreeze, which contains inhibitor is used.	Paras. 126, 127; figs. 36, 60, 61.
37	Fuel tank and filter-----	Clean the strainer in the fuel tank filler pipe, drain sediment from fuel tank. If excessive contamination of the tank is noted, drain into a container.	Figs. 69, 72.
38	Bumpers, pintles and shackles-----	Bumpers—front and rear, pintle, and lifting shackles will be inspected. Test operation of pintle assembly and note whether it locks securely.	Figs. 189, 190.
39	Power-takeoff winch-----	Inspect power-takeoff, winch drive shaft, and shear pin. Inspect vent in the worm housing for clogging.	
40	Winch cable-----	Clean and oil winch cable in accordance with the lubrication order.	
41	Propeller shaft and U-Joints-----	Inspect propeller shaft assemblies. Tighten universal joint companion flange nuts, wheel and drum flange stud nuts.	

Table III. Preventive Maintenance Checks and Services—Continued

Organizational

Semiannual

Sequence No.	Item to be inspected	Procedure	Paragraph and figure references
42	Vents.....	Make general observations underneath the vehicle for evidence of oil, water, fuel lubricant, or exhaust leaks. Inspect the vents in the front and rear axle, transfer, and steering gear housing for clogging.	
43	Wheel bearing.....	Disassemble, clean, and repack one wheel bearing.....	Paras. 208, 216; figs. 137, 146, 148.
44	Brake shoes, lining, anchor pins, springs.	Test brake linkages for freedom of action. Inspect lines for leaks. Examine brake drums, shoe, anchor pin and support. Check wheel cylinder for leakage. Check operation of master cylinder.	Paras. 233, 235; figs. 158, 161.
45	Tires.....	Rotate and inspect tires according to tread design and degree of wear. See TM 9-1870-1 for acceptable limits in matching tires. Tighten axle drive flange nuts.	Paras. 249, 252; figs. 169, 173.
46	Springs and shock absorbers.....	Inspect springs, shackles, shock absorbers and attaching parts for damage and breakage.	
47	Body and frame.....	Tighten body and holddown bolts.	
48	Lubrication.....	Lubricate vehicle in accordance with lubrication order. Coordinate lubrication with inspection and disassembly operations to avoid duplication.	
49	Clean.....	Wash vehicle, clean inside of cab, glass and vision devices. Clean engine and engine compartment as required.	
50	Fuel.....	Service fuel tank as necessary.	
51	Test.....	Final road test vehicle, observe items which required repair, replacement, or adjustment.	

Note. Clean and repack all bearings during the second semiannual P.M. Service.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
*General, United States Army,
Chief of Staff.*

Official:

J. C. LAMBERT,
*Major General, United States Army,
The Adjutant General.*

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NG: State AG (3) units—same as active Army except allowance is one copy to each unit.

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For explanation of abbreviations used, see AR 320-50.

☆ U.S. Government Printing Office: 1964-750588